

## Daffodil International University: A Study on Master Plan Projection

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**Abstract:** Daffodil International University (DIU) is on its way to be the number one ranked university of Bangladesh by providing quality education and making leader for the future. As a top ranked university of Bangladesh, the quality and the IT based education system has created the university as a model of excellence for other universities of Bangladesh. Arrangement of different faculties, innovative programs under different departments, strong administration members, etc. has made Daffodil International University as unique one. By keeping its uniqueness, DIU is going to build the number one Permanent Campus of a private university with all modern and latest educational facilities and the work of the Permanent Campus at Ashulia was started on 10<sup>th</sup> February, 2011. The Permanent Campus project is in progress and will be implemented in four phases and it will have individual faculty and administrative infrastructure, residential hall, library, cafeteria, TSC, auditorium, playground, swimming pool, gymnasium, departmental faculties, and ICT center. This study is designed to describe the establishment and the authentic growth of DIU main campus, in details, to demonstrate the future plan of this university as a guideline for future development of a university Master Plan and it covers the entire activities done by DIU and future planning for completing the Permanent Campus at Ashulia.

**Keywords:** Daffodil International University, Permanent Campus, Master Plan, Ashulia.

### 1. Introduction

DIU is one of the top ranked institutions of higher education in the Bangladesh. More than 11,500 degree candidates are enrolled at the University, including undergraduate, under postgraduate, and professional students. DIU, located in Dhanmondi, Uttara and Ashulia, has more than 7,489 alumni around the world. DIU is devoted to excellence in teaching, learning, and research, and to developing leaders in many disciplines who make a difference on campus, in the community, and throughout the region, the nation and the world. The University has several degree granting universities for Advanced Study, offering a truly global education.

DIU presents a 14-years Plan for its permanent campus in Ashulia. The plan focuses on a range of physical planning objectives of the university in a broader aspect that serve the local community as well. This is a comprehensive plan that will expand the university's academic presence and builds upon its shared goal of extending community programming, improving the public realm and infrastructure for DIU and the local community, and creating a new nexus where the educational institution meets the neighborhood. Proper implementation of the plans will lift the image of DIU as a single unified higher academic institution that supports teaching, advances research, and fosters innovation. The planning for its campus locations in Ashulia has been defined by a development framework that balances the benefit

of a comprehensive and predictable plan with the long-term flexibility needed by a dynamic, rapidly evolving academic enterprise. Consistent with the University's history, today the academic mission continues to evolve creating new types of campus growth needs. New technologies, discoveries, and societal issues require facilities that support innovation and collaboration in new ways and at new scales. DIU will continue to address these academic evolutions, and its land in Ashulia will provide an opportunity to develop new campus resources to support the University's dynamic teaching and research mission.

### 2. Objective of the Study

The main objective of the study is to focus on the establishment and the authentic growth of DIU permanent campus to demonstrate the future plan as a guideline for future development of the Master Plan. There are also some specific objectives:-

- To know the present status and progress of Master Plan of the University
- To know future academic facilities, residential life, administration function, athletics, vehicular circulation, parking facilities, environment facilities etc. of the campus.
- To know the architectural design of the campus buildings and objectives of the designing.

- To know the future capacity of students, teachers, into the campus and per capita space for them.
- To know the future extension of the DIU permanent campus and relationship to the neighborhood.

### 3. Literature Review of the study

For a standard university, an arranged and beautiful campus is very essential. A university is defined by its people and its campus (Dr. Alice P. Gast, President of Lehigh University, 2012). It ensures the proper management and comfortable environment of study. For being a world class international university, some functional characteristics are mandatory. These are academic facilities (enough classrooms, library services, IT facilities), residential life (hostel, dining, recreation facilities), administration function (admin office, welcome center), enough campus areas (open space), athletes (enough playground), vehicular circulation (enough road facilities, Parking), alternative transportation, utility facilities, environmental sustainability, etc. (Indiana State University Campus Master Plan, By Ratio, Dec 18, 2009). The university requires Master Plans for the future development of both of these campuses that can guide the thoughtful development of both campuses in accordance with a set of fundamental planning principles that provide consistency in decision making, the ability to make informed decisions, predictability, and the most effective use of resources (Michael A. McRobbie, President, Indiana University, March 2010). The Florida Board of Governors, for example, requires each member of the public university system in Florida to develop a campus master plan that covers a 10 to 20 years horizon and is updated every five years (Florida Board of Governors. Rules of the Department of Education Board of Regents, Chapter 6C-21: Campus Master Plans, 2009). The goal of the planning should be encouraged to develop a campus into an eco-friendly and sustainable environment through energy and natural resource conservation and environmental protection. The concept of master planning is slightly different among Asia, Europe, and United States in terms of geographical system, population size, culture, land size, security system, etc. It is not a hard and fast rule of the planning document. It can be changed or developed with time needs. At the beginning of the 20th century, the trend of campus master planning was horizontal as there was enough land compared to the number of students. But at the recent time with the scarcity of available free space, the planning process is converted to vertical (Ibrahim s. Nassar, YEAR, P.E., Faculties planning department, Saudi Aramco). The first Dacca city master plan for the planned development was prepared in 1950-60 on an area of 320 square miles (820 sq. km) considering plan period of 20 years. But after the independence in 1971 when Dacca was declared

capital of Bangladesh, almost all the earlier assumptions of the plan were failed and the city largely started to grow spontaneously. The second master plan namely 'DHAKA' Metropolitan Development plan (DMDP) 1995-2015 was prepared in 1995 comprising 1528 sq. km (590 sq. mile) with a new approach and perspectives. The Structure Plan, Urban Area Plan and Detailed Area Plan (DAP) that incorporates the various urban strategies, policies and development programmers. It also provides planning, guideline techniques, planning rules and development control procedures. In the light of DMDP, RAJUK has prepared Detailed Area plan (DAP) within its jurisdiction (RAJUK Website, 2015). Muzharul Islam started work on the master plan of Jahangirnagar University in 1967. He continue to work in this project till 1970 at which point the major portion of the master plan still remains unrealized (Muzharul Islam Website, 2015). The plan for the future campus of the Asian University for Women (AUM) has been developed by the world renowned architectural firm Moshe Safdie and Associates. The first phase of the Master Plan, called the Campus Center, began construction in late 2010. A significant element of AUW's mandate is to demonstrate through its design and construction a more environmentally sustainable way of building (AUM Website, 2015). With the view to solving the problem in higher education available to the students, the government has accorded permission for the establishment of private universities in the private sector by promulgating the Private University Act, 1992. After sometime, the government, in consultation with the University Grants Commission (UGC) of Bangladesh, has made some amendments of the Act in 1998. According to the Private University Act, the basic pre-conditions for the establishment of a private university are as follows: an academic plan to be approved by the UGC, at the initial stage a minimum of two faculties are needed to open and establish, qualified teachers for each faculty to be approved by the UGC, apart from those conditions, one of the major conditions is that a house rented or owned having 10,000 sft of floor space is required for classrooms, and a permanent campus with one acre of land is mandatory. Academic and administrative activities, library, laboratories, seminar room, and other facilities are needed as well. Complying with the above mentioned conditions 79 private universities have been established and operating in the country so far (UGC Website).

### 4. Methodology:

This study is basically exploratory in nature. Given the nature of the study, it was required to collect data both from Primary sources and Secondary sources. In getting primary data the authors visited the Daffodil International University permanent campus a number of time and gathered information by interviewed the Chairman, Vice Chancellor,

Director of Research & Development, and all the team members related with the project work of permanent campus. The data thus were collected and presented in the study. Secondary data were collected different sources such as: University website, world class universities campus master plan, publication, electronic database and journals to develop theoretical background for the study.

## 5. Daffodil International University Permanent Campus Master Plan (Current Approach)

### Project Overview

The DIUMP (Daffodil International University Master Plan) presents plans for the near-term physical development of DIU's campus in Ashulia. Among the main components of the Fourteen-Year Plan is the construction of four new academic buildings, five new faculty and/or administrative buildings, the addition to and renovation of existing structures, international student building, male and female hostel, civil lab, Sports field, basketball court, volley ball court, tennis court, golf field and institutional/mixed use building, research and ICT center. The full list of projects is noted below. These projects are described in more detail in further study.

### 5.1 Master Plan Phases:

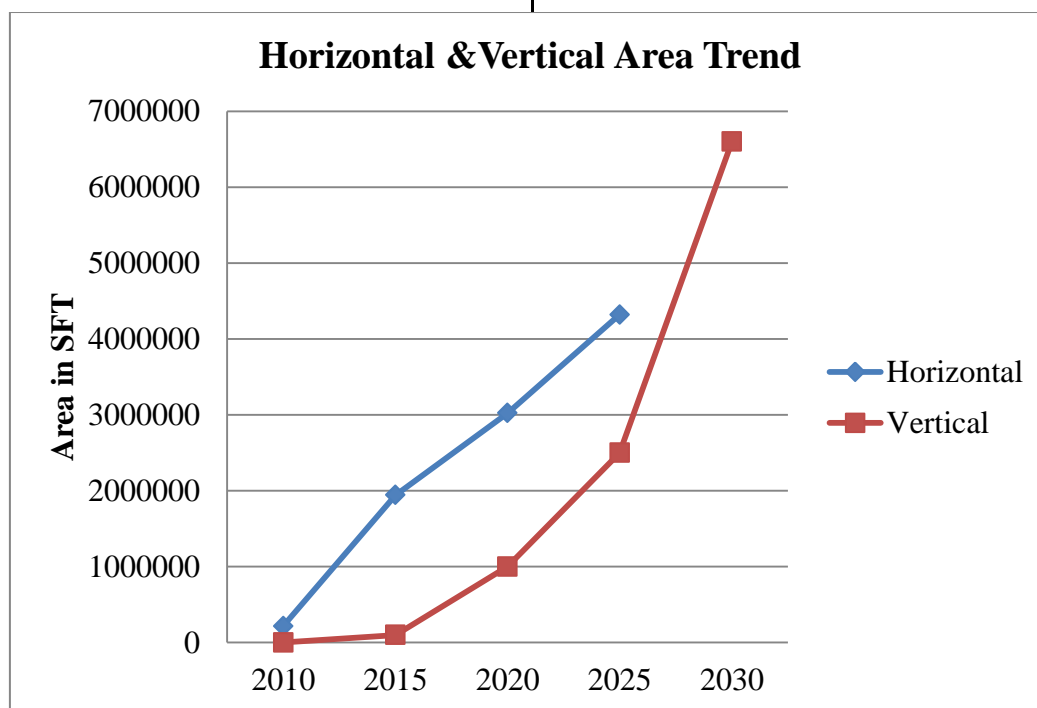
- **Preliminary Phase (2012 to 2014):** Land 36.74 Acres, Academic Building (7 Storied), Civil Lab (3 Storied), Academic Building 2 (3 Storied), Entrance Gate, Sports Field, Security Check Guard Boxes, Tennis Court, Basket Ball Court, Bio- Gas Plant, Shahid Minar, Initiation of Academic Building 3.
- **Phase 1 (2015 to 2018):** Land (Adding 36.74 - 72 Acres), Academic Building 3 (6 storied), Capacity (6000 Students), Initiation of Student Hostel Building (2000 Students), Initiation of Faculty Quarter Building (100 Teachers), Golf Field & Volley Ball Court, Time based decision.
- **Phase 2 (2019 to 2022):** Land: Adding (36.74 - 72 Acres), Academic Building 3 (Complete), Student Hostel (Complete), Initiation of Academic Building 1, Initiation of International Student Building, Capacity (15000 Students), Initiation of ICT & Research Tower, Initiation of Multipurpose & Medical Faculty Building, New Staff Quarter, Time based decision.
- **Phase 3 (2023 to 2025):** Academic Building 1 (Complete), Capacity (25000 Students), Completion of All Structures, Renovation (If required), Initiation of New Planning for Further Process.

### 5.2 Long-Term Planning Principles

DIU's planning for Ashulia is focused on supporting the University's teaching and research mission and advancing the needs of university and its' activities. Today, the thirteen year long pattern of University growth continues as demands for new and different spaces continue to emerge from many areas of the University's academic community. Some of the projects proposed in the Daffodil International University Master Plan (DIUMP) reflect the growth of specific programs or the need to maintain and improve older facilities. Other activity is driven by advances in life science and engineering. Fields of science such as these increasingly require large-scale facilities that provide high bay space, long spans, extensive loading and service capabilities, and layout flexibility. The main campus in Dhanmondi has limited space to accommodate this type of development, but Ashulia provides an opportunity to pursue these academic goals. In addition, DIU's institutional growth proposed for Ashulia is intended to connect with the region's innovation economy. DIU's planning for its campus in Ashulia is guided by a set of core principles established by the University's leadership. Reinforcing DIU as a single unified campus is critical among these, as is developing a strong public realm that can be shared by the University and the community. From a programmatic perspective, important principles include encouraging innovation and incubation, and capitalizing on interdisciplinary collaboration. Other key principles include extending DIU's iconic character, making Ashulia a campus anchor and developing shared common spaces. In terms of implementation, DIU's Ashulia planning is guided by the principle of balancing the visionary and the practical.

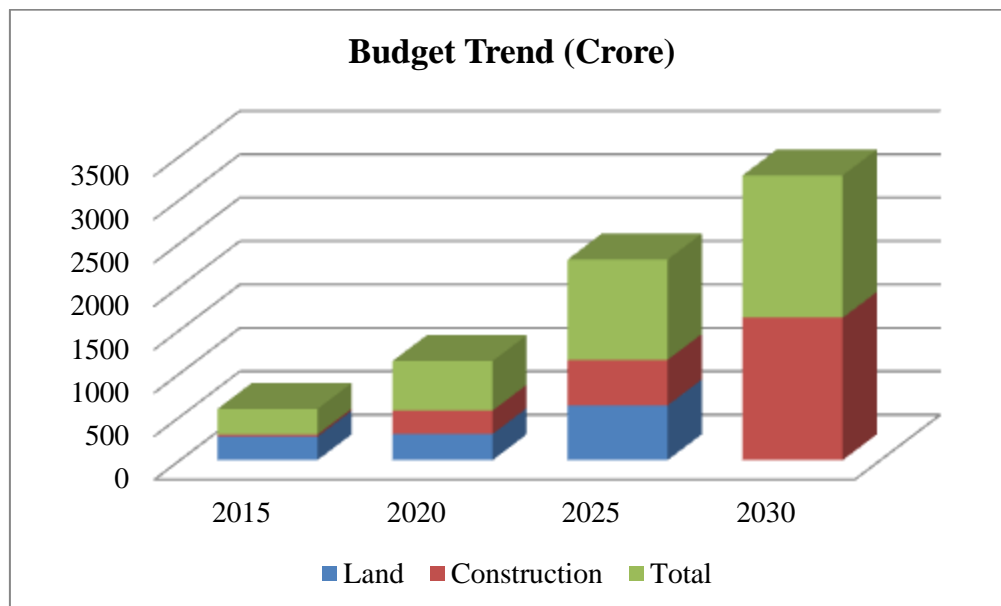
**Horizontal Planning:** DIU is planning to acquire more lands adjacent to its existing territory. The authority is emphasizing on horizontal land expansion. In the long run, the land resource will not be available for 100 years of planning, even though it will have an ever- increasing demand at any point of time. The demand for accommodation will rise in the future as with the increase in the number of students. DIU already owned 36.74 acre lands within and beside the Master Plan boundary including 3 acres for staff quarter and 3 acres for male hostel housing.

**Vertical Planning:** After acquiring the horizontal land as Master Plan planning, DIU intends to go with vertical planning. The existing and proposed structures will then be continued to complete at the top level as their structural design has been approved. At present all the foundation of these structures are being made in that way.



**Figure 1: Horizontal & Vertical Area Trend**

Here Figure 1 presents the horizontal and vertical area trend from 2010 to 2030. In 2010 the land area was 216000 sft. At the end of the 2015 it will be increased to 1944000 sft and 3024000 sft in 2020. In 2025 the target land will be acquired to 4320000sft. The vertical curve shows the construction work that will be increased gradually from 2015(100000sft), 2020(1000000sft), 2025(2500000sft) to 2030(66000000sft).

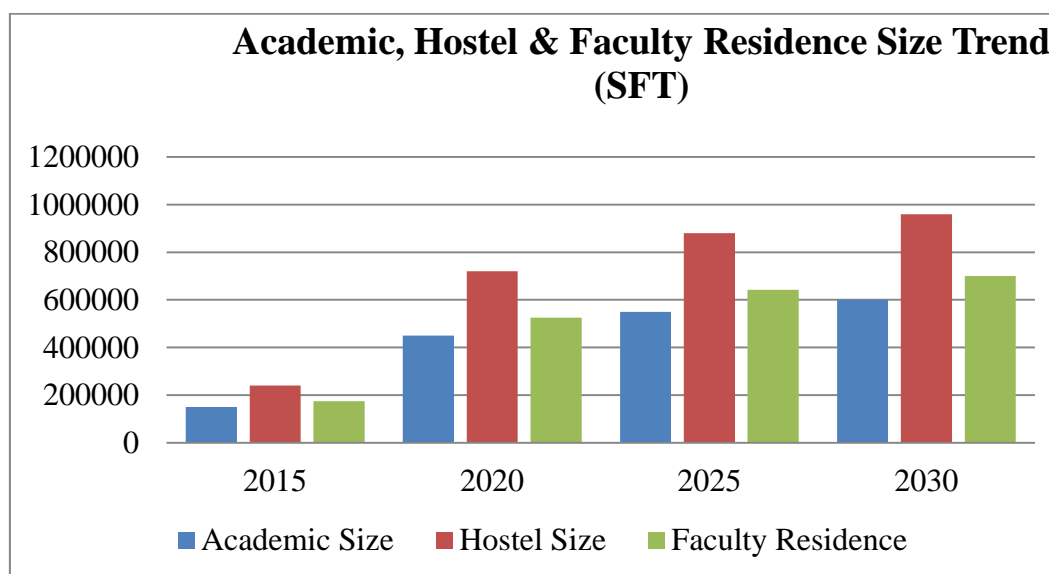


**Figure 2: Budget Trend in Crore**

The Figure 2 above shows the budget trend in crore from 2015 to 2030. The authority intends to go with horizontal land expansion. So a major portion of investment will invest in purchasing land from 2015 to 2025 (270, 300 and 630 crore tk.) and for the vertical construction it will take (25, 270, 525 and 1640 crore tk.) at the end of 2030 the total investment will be 3660 crore tk.

### 5.3 Academic, Administrative, and Other Properties

DIU's portfolio of academic, administrative, and commercial buildings is extensive. Although the buildings are primarily centered along a large area, they also include buildings in the nonresidential buildings, the science and engineering buildings, and assorted other buildings across the Permanent Campus.



**Figure 3: Academic, Hostel & Faculty Residence Size Trend (SFT)**

Here Figure 3 illustrates the trend of academic, hostel and faculty members' residence sizes from 2015 to 2030. These sizes were determined by the student population enrolled in different years. The student number will be increased gradually as well their academic, hostel size and faculty members. At the end of 2030, to accommodate 35000 students, the authority will need 1750000 sft of academic size, 2800000 sft of hotel size and 2042250 sft for faculty members' residence.

#### 5.3.1 Academic Building (Existing)

In earlier years, DIU has completed an academic building. The building is approximately 51,000 square feet and seven (7) storied in heights. It is built in such a manner that makes the structure more aesthetic and attractive. The construction work started in 2009 and finished by 2012. All materials, equipments, and furniture used here are very standard and of high quality. The academic facility fits with international university standard. Every floor consists of class rooms, faculty rooms, laboratories, and other rooms for different purposes. The building is very friendly designed and has enough spaces for students' communication.

#### 5.3.2 Academic Building 1 (Proposed)

Within the second phase, 2019 to 2022 of the planning horizon of this Master Plan, DIU intends to build the main academic building 1. As currently planned, the building will be approximately 800,000 square feet and twelve (12) storied in heights. Its footprint is designed from the concept of welcoming shape. So, the students can feel welcomed greetings when they take their first step within the campus boundary.

#### 5.3.3 Academic Building 2 (Existing)

The Academic Building 2 is complete. It is approximately 32,355 square feet and three (3) storied in heights. The construction work has been started from the mid of 2013.

#### 5.3.4 Academic Building 3 (Working Progress)

The academic building 3 is now under construction. The construction work was started in the mid of 2014. As currently planned, the building will be approximately 508,777 square feet and twelve (12) storied in heights. The structural outlook is very incomparable than any other structures. There will be six buildings interconnected with each other. Three buildings will be used as the academic building of Faculty of Science and Information Technology (FSIT), Faculty of Business & Economics (FBE), Faculty of Human and Social Science (FHSS), and for other programs and courses. Other buildings will serve multipurpose including library and auditorium facilities along with other curricular facilities. It will consist of facilities such as, lobby, lounge, reception, seminar hall, gymnasium, swimming pool, an auditorium with more than 1200 capacity, class rooms, faculty rooms, departmental offices, server rooms, IT section rooms, laboratories, library, etc.

#### 5.3.5 Civil Laboratory (Existing)

The civil lab's construction is complete. The construction work has started from the mid of 2013. The building is approximately 7,500 square feet and three (3) storied in heights. It is designed by steel structure.

#### 5.3.6 Research and ICT Building (Proposed)

For any standard university Master Plan, Research and ICT building are very essential for the students



and as well as for the teachers. DIU aims to acquire more lands where the authority can build a research and ICT building. All the construction work will be started within the second phases, 2019 to 2022 (if possible). As future planned, the two buildings will be approximately 128,000 square feet and twelve (12) storied in heights.

### **5.3.7 Administrative Personnel and Faculty Members Quarter (Proposed)**

In the first phase, 2015 to 2018 of the planning of this Master Plan, DIU intends to build two quarters building for administrative personnel and three for faculty members. The construction work is going to start from 2015 and the work will be finished based on time requirements. As currently planned, these building will be approximately 14,400 and 21,600 square feet and twelve (12) storied in heights.

### **5.3.8 Student Hostel Building (Proposed)**

Within the first phase from 2015 to 2018 of the planning of this Master Plan, DIU intends to initiate the construction work of Student Hostel Building. As currently planned, the building will be approximately 250,000 square feet and twelve (12) storied in heights.

### **5.3.9 Multi Purpose Building (Proposed)**

In the second phase from 2019 to 2022 of the planning horizon of this Master Plan, DIU aims to build the Multi Purpose Building. The building will be approximately 70,000 square feet and ten (10) storied in heights. There will be shopping mall, rest house, studio apartments, electrical substation, auto shop, and maintenance. Restaurants and departmental stores are also planned to arrange in this building.

### **5.3.10 Other Physical Contents**

There are other physical contents already completed within the boundary of Master Plan. The Entrance Gate is very beautiful. It also includes with two security guard boxes with all security equipments. In the front of the entrance there is a big Green Sports Field. Beside the existing academic building there is a Basket Ball Court. At the southeast corner beside the entrance gate there is a tennis court. At the southwest corner there will be a Golf Field on working progress. One of the best feature of the Permanent Campus is the Shahid Minar that is located beside proposed Golf Field area.

## **6. Utilities and Infrastructure**

DIU is committed to the improvement of its infrastructure and utility use; recent initiatives have reduced fossil fuel demand, the burden on local utility providers, and pollution of nearby waterways. They have also contributed to a cleaner, greener community by preserving natural resources and cutting the Permanent Campus's carbon

footprint, and have brought financial savings for the University.

### **6.1 Sanitary Sewer System**

DIU has made a number of improvements to the condition and capacity of the sanitary system around its campus. For example, many sections of sewer pipe have been replaced to enhance the condition and functionality of the sanitary sewer system, while sewer discharge quantities have been reduced and storm water inflow removed, allowing for greater capacity in the sewers and less demand for wastewater treatment.

### **6.2 Water Supply System & Water Conservation**

DIU is managing its own supplies of clean drinking water to buildings on campus. It maintains the water distribution system within the campus boundary. DIU has the capacity to manage over one lakh (100, 000) residents' water needs. During the past three years, DIU has taken steps to reduce and limit the consumption of water in existing and new buildings. The University has implemented an aggressive water conservation programs.

### **6.3 Natural Gas Distribution (Bio-Gas Plant)**

In earlier years, DIU has been using *Patro Bangla* gas to the existing buildings where economically practical. Many buildings on campus use natural gas to fuel their primary heating systems, and natural gas is also piped to dining facilities, residential kitchens, and laboratories. There is also a Bio-Gas plant under construction.

### **6.4 Electric Service Distribution**

DIU is using the electricity sources from Solar, and Polli Bidduth. It has implemented many energy conservation initiatives—with many more expected in future. In the past three years, the University lowered energy use on campus than before. Each large building on campus has a dedicated electric transformer, which greatly improves the efficiency of power delivery.

## **7. Sustainability**

The DIUMP submission will include a detailed section on sustainability. It should be emphasized, however, that sustainability has been integrated as a central theme throughout the planning process for Ashulia and therefore sustainability will be incorporated throughout the DIUMP. Key elements of a sustainable approach that will be incorporated throughout the Ashulia Master Plan include: Smart growth, Green spaces, Transportation choices, Water Management, Green Building Design

## **8. Community Benefits**

DIU University is proud to work with the City, and commits to identify opportunities to bring University resources to bear for the betterment of the neighborhood. The University makes

considerable contributions to the City of Ashulia, providing a wide range of programs and initiatives in the areas of education, public health and fitness, housing, and culture. In Ashulia, DIU has extensive existing community programs that have emerged through years of engagement. DIU employs many local residents and attracts millions of cash to the Commonwealth annually and strives to bring the best and brightest to its campus. Opportunities for innovation, research, and scholarship make Greater Ashulia a desirable destination for the brightest minds in the world, and no doubt contribute to the Commonwealth's national leadership in the knowledge and research-based economy.

**Existing Community Benefits:** Education, arts and culture, road networks, green development, natural beauty, public health, workforce and housing, physical improvements and greening initiatives

### 9. Other Findings of the Study

As the necessity of an overpopulated country, DIU provides quality education to a large number of students. It is easy to say that the future of this university has large responsibilities for making quality manpower in the country. One of the positive sides is that the main campus of this university is at the nearest distance from the center of the capital city Dhaka compared to other permanent campuses of different private universities. But unfortunately, the road transportation system from Dhaka (Main Campus) to Ashulia (Permanent Campus) is not that good condition. Thus, it kills much time unnecessarily to reach there. Adjacent to the permanent campus, there is a bridge that is now under construction. It is expected that once the bridge is constructed, the transportation facility will become very much convenient. Compared to the future plan of the university campus, the land area of the Permanent Campus is not enough. The authority already owned 36.74 acres of land within and outside of the boundary. They are now aiming at horizontal integration in case of purchasing more lands adjacent to the campus for the proper completion of the Master Plan. Some lands purchasing decisions are in progress by the authority. The academic activities of Permanent Campus have already been started, but there are not enough facilities for the proper accommodation and dining facilities for teachers, students, and administrative staffs. The authority has less control over student community. There will be a need of medical facilities at a great extent as the number of student increases.

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Surrounding three universities will become strong competitors for DIU. To acquire more land for the campus is not easy. Many other parties want to buy the lands for their own purposes.

### 10. Conclusion

Providing all the facilities to the university students is not possible in a populated country like as done by other reputed universities around the world. Authority should plan to acquire more lands for the campus. In future the building structures can be constructed vertically, so it is fruitful to plan horizontally by purchasing more land as possible. To assist the goal of DIU, authority should be concerned about the road which is in a very poor condition right now. The road construction should be taken immediately in use to increase the number of students. There are some limitations for facilitating the growing number of students in the nation. It is not possible to make a campus with a huge campus area and keep a huge open space for the students. Nevertheless, with the strong mindset of the authority and the necessity of the nation, DIU is making a beautiful campus like other world class universities. Based upon the Master Plan and the implementation of Phase 1, as well as the market study and financial analysis, the vision of the DIU Permanent Campus is to take an image as the place to embark on a new future for the university and become a catalyst for jobs for the Dhaka city and the surrounding area. This vision is based upon an understanding of what has been successful for top research universities across the world. By building upon this knowledge based institution, expectations are that the DIU campus will be able to go beyond what is expected for the standard education system and create a place where scholars come together. The commitment the university is making to develop the site using environmental sustainability principles will set an example for future development within the region and beyond. By creating a greenery based campus consisting of trees, native plantings, open spaces, trails, alternative transportation network, and site amenities, the DIU Permanent Campus will be viewed as a community asset and a public gathering area. Once developed, the campus will significantly enhance economic development locally, regionally, and even nationally, and will be a milestone as a private university in the history of Bangladesh. Thus, this study is completely new that bears empirical and theoretical application. Further research in this area can be conducted to improvise more on this field and to assist other universities' goal to establish a proper master plan.

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